

## Summary for Test 1

### **Ideal Gas:**

$$pV = NkT = \nu RT \text{ and microscopic picture}$$

### **Equipartition Theorem:**

$$U_{\text{therm}} = N \frac{f}{2} kT \quad (\text{apply and determine } f \text{ and derive for ideal gas})$$

### **1st Law of Thermodynamics:**

$$\Delta U = Q + W \quad W = - \int p dV$$

( $pV$  diagrams, adiabat, isotherm, straight lines)

### **Heat Capacities and Enthalpy:**

$$C = \frac{Q}{\Delta T} \quad C_V = \left( \frac{\partial U}{\partial T} \right)_V \quad C_p = \left( \frac{\partial H}{\partial T} \right)_p$$

$$C = m c$$

$$H = U + pV \text{ (apply to reactions; if on exam, then table will be provided)}$$

NOT on Test 1 (for Test 2) **Heat Conduction, Diffusion:** microscopic picture